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10/623,856

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12/07/2004

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EXAMINER

TRAN, ANH Q

ART UNIT

PAPER NUMBER

2819

DATE MAILED: 12/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/623,856

Applicant(s)

GOTOH ET AL.

Examiner

Anh Q. Tran

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7/18 & 7/29/03.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3, 7-8, 12, 15-16, 21-23, 25-26, 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Barber et al (6,307,447).

1. Barber shows a piezoelectric filter (48, Fig. 3) comprising: a plurality of piezoelectric resonators including a substrate (10) and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least one piezoelectric thin film (18) are sandwiched between at least a pair of an upper electrode (40, 41 & 46, 44) and a lower electrode (22) facing each other; wherein the upper electrode of at least one of the plurality of piezoelectric resonators is made of a material (41 & 46) having susceptibility to etching that is different from that of the upper electrodes of the other piezoelectric resonators.

2. Barber shows a piezoelectric filter comprising: plurality of piezoelectric resonators including a substrate and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least are sandwiched between at least a pair of an upper electrode

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and lower electrode facing each other; wherein an additional film (46) is provided on the upper electrode of at least one of the plurality of piezoelectric resonators, and the additional film has susceptibility to etching that is different from that of the materials for the upper electrodes of the other piezoelectric resonators (col. 6. lines 34-41) .

3. Barber shows the upper electrodes of the plurality piezoelectric resonators are made of the same material (40, 41, 44).

7-8, 15-16. The limitations of claims 7-8, 15-16 are rejected as above.

12. Barber shows at least a portion of the plurality of piezoelectric resonators share a lower electrode (col. 4, lines 48-51).

21-23, 25-26, and 29. The apparatus described above is applicable to the method claims 21-23, 25-26, and 29.

3. Claims 1-5, 7-11, 13-18, 20-23, 25-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Tikka et al (6,407,649).

1. Tikka shows a piezoelectric filter (51, 52, Fig. 7) comprising: a plurality of piezoelectric resonators (71a, 71b, 72a, 72b) including a substrate (Substrate) and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least one piezoelectric thin film (Piezolayer) are sandwiched between at least a pair of an upper electrode (top electrode, top electrode & shunt tuner) and a lower electrode (bottom electrode, bottom electrode & Tx tuning layer) facing each other; wherein the upper electrode of at least one of the plurality of piezoelectric resonators is made of a material (top electrode &

shunt tuner) having susceptibility to etching that is different from that of the upper electrodes of the other piezoelectric resonators.

2. Tikka shows a piezoelectric filter (Fig. 7) comprising: plurality of piezoelectric resonators including a substrate and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least are sandwiched between at least a pair of an upper electrode and lower electrode facing each other; wherein an additional film (top electrode & shunt tuner) is provided on the upper electrode of at least one of the plurality of piezoelectric resonators, and the additional film has susceptibility to etching that is different from that of the materials for the upper electrodes of the other piezoelectric resonators (col. 4, lines 60-63) .

3. Tikka shows the upper electrodes of the plurality piezoelectric resonators are made of the same material (top electrode).

4. Tikka shows a plurality of piezoelectric resonators (51a, 51b, 52a, 52b, Fig. 5) including a substrate (Substrate) and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least one piezoelectric thin film (Piezolayer) are sandwiched between at least a pair of an upper electrode (top electrode) and a lower electrode (bottom electrode) facing each other; wherein the vibration portions of the plurality of piezoelectric resonators are covered with a protective film (shunt tuner, 52b), and an additional electrode (Tx tuning layer, 52b) is provided on the upper electrode of at least

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one of the plurality of piezoelectric resonators with the protective film being located therebetween.

5. Tikka shows the piezoelectric thin film includes one ZnO and AlN (col. 1, line 14).

7-9. The limitations of claims 7-9 are rejected as above claims 4.

10-11. The limitations of claims 10-11 are rejected as above claim 2, furthermore, Tikka shows an additional film is provided on the lower electrode (Tx tuning layer, 72a & 72b, Fig. 7).

13. Tikka shows wherein the plurality of piezoelectric resonators are arranged in a ladder configuration (col. 6, line 36).

14. Tikka shows a duplexer (col. 6, line 50) comprising the piezoelectric filter according to Claim 1.

The limitations of claims 15-18, 20 are rejected as above claims.

The apparatus described above is applicable to the method claims 21-23, 25-28.

4. Claims 1, 6, 15, 19, 21, 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Larson, III et al. (6,483,229).

1. Larson shows a piezoelectric filter (10, Fig. 1) comprising: a plurality of piezoelectric resonators (20, 30) including a substrate (12) and a vibration portion provided on the substrate, the vibration portion having a structure in which top and bottom surfaces of a thin film portion including at least one piezoelectric thin film (24, 34) are sandwiched between at least a pair of an upper electrode (26 & 25, 36) and a

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lower electrode (22, 32) facing each other; wherein the upper electrode of at least one of the plurality of piezoelectric resonators is made of a material (25 & 26) having susceptibility to etching that is different from that of the upper electrodes of the other piezoelectric resonators.

6. Larson shows the substrate has at least one of an opening and a concave portion (21, 31) and the vibration portion is provided on the at least one of the opening and the concave portion.

15, 19, 21, 24. the limitations of claims 15, 19, 21, 24 are rejected as above claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anh Q. Tran whose telephone number is 571-272-1813. The examiner can normally be reached on M-TH (7:00-5:30) Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Tokar can be reached on 571-272-1812. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Anh Q. Tran
Examiner
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12/2/04